

Message

**From:** Paul Rosasco [paulrosasco@emsidenver.com]  
**Sent:** 5/25/2016 8:10:29 PM  
**To:** Vann, Bradley [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=5ee918a962b840e6b217201772f1d7bc-VANN, BRADLEY]; Barker, Justin [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=51c9825509f24b38b0767bb469043c8d-Barker, Jus]; Mahler, Tom [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=db0a64d5fa6d45d08690d00569a4d6c9-MAHLER, TOM]; Hooper, Charles A. [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=087c168d065e4ceb8e61d7b4d1946ac8-HOOPER, CHARLES]; Phillips, Todd [/o=ExchangeLabs/ou=Exchange Administrative Group (FYDIBOHF23SPDLT)/cn=Recipients/cn=e6a6c9ee815646f192800959ca0e060b-PHILLIPS, TODD]  
**CC:** 'Mike Bollenbacher' [mikeb@auxier.com]; 'Becky Collins' [bcollins@auxier.com]  
**Subject:** Revised Receptors and Exposure Pathways and Exposure Factors -Conference call tomorrow at 9 AM CDT?  
**Attachments:** Parameter Table West Lake May 17 2016 - Future.docx; Summary of Potential Exposure Pathways - Revised (9).xlsx; ExposurePathway 5\_18.pdf; Parameter Table West Lake May 17 2016 - Current.docx

Attached are a revised table of the potential receptors and exposure scenarios which have been modified per the comments you previously provided. Also attached is a figure of the potential exposure pathways. We are also including tables of the exposure factors for the current and future use scenarios.

We would like to have a call to discuss these items before everyone who can escapes for the long weekend. Tom indicated that Todd was only available tomorrow morning so how does 9 AM CDT time work? If that works for all of you, could I ask Brad or Tom to circulate a call in number.

Lastly, the following is draft (still rough) text regarding the basis for selection of specific receptors (the ranking of receptors):

Within each group of candidate receptor scenarios, there may be more than one plausible receptor with complete exposure pathways. When such a situation arises and the receptors are very similar, the receptor with the greatest exposure is selected for quantification. To determine the receptor in each group that has the greatest exposure, a comparison of exposure parameters was completed below. With exceptions in the recreational user and trespasser, sources for the parameter values are provided in Tables (\*\*Parameters for Current and Future\*\*). Recreational user and trespasser parameter sources are included below.

Residents and farmers:

Parameter	Resident	Farmer
Exposure Time (hours/day)	~18 for radiological risk 24 for chemical risk	~22 for radiological risk 24 for chemical risk
Exposure Frequency (days/year)	350	350
Exposure Duration (years)	20	34

Therefore, if a farmer and resident are both plausible, with complete exposure pathways, the farmer will be selected for quantification because of the higher exposure parameters.

Recreational/Temporary Users:

Parameter	Recreational User	Trespasser
Exposure Time (hours/day)	4	8
Exposure Frequency (days/year)	10	12
Exposure Duration (years)	11.7	5

The source of the recreational user exposure time is Table 16-65 in the EFH (EPA, 2011). The value included in this risk assessment is the average active leisure plus the average passive leisure (divided by 7 because values in Table 16-65 are given in hours per week).

An exposure duration is unavailable for the recreational user. A conservative approach is to assume that one who participates in recreational activities would consistently do so throughout the duration of occupancy at one residence. Consequently, the mean residential occupancy period from Page 16-21 in the EFH (Section 16.5.1.1) (EPA, 2011) is applied as the exposure duration for the recreational user.

The trespasser scenario is based on likely activity patterns described by EPA Region 3 in a personal communication (Pam Holley 9/21/98).

In exposure equations, the three parameters presented above (time, duration, and frequency) are multiplied together, forming a product that represents the number of hours the receptor is assumed to be exposed. For the recreational user, this product is 468 hours. For the trespasser, this product is 480 hours. Between these two receptors if a recreational user and trespasser are both plausible, with complete exposure pathways, the trespasser will be selected for quantification because of the higher exposure parameters.

Workers:

The worker receptors include the storage yard/outdoor worker, grounds keeper, construction worker, and commercial building user. Each of these receptors is unique. Therefore, with one exception, complete exposure pathways will be evaluated for these receptors. If complete exposure pathways exist for an on-property grounds keeper and an off-property grounds keeper, only the on-property grounds keeper will be quantified. The two receptors have the same parameters and the on-property receptor is in closer proximity to impacted materials. It is worth noting parameters for the storage yard worker, grounds keeper, and commercial building user under current conditions.

<b>Parameter</b>	<b>Storage Yard Worker</b>	<b>Grounds Keeper</b>	<b>Commercial Building User</b>
Exposure Time (hours/day)	4	2	8.1
Exposure Frequency (days/year)	225	26	250
Exposure Duration (years)	6.6	6.6	6.6

The storage yard worker and recreational user are both outdoor users. The product of these parameters, 480 hours, was presented above for the recreational user. For the storage yard worker, the product of these parameters is 5940 hours, more than ten times the product for the recreational user. Therefore, when these two receptors have complete pathways within a scenario, the storage yard worker's exposure will be quantified.

Thank-you, Paul

*Paul V. Rosasco P.E.  
Engineering Management Support, Inc.  
7220 West Jefferson Avenue, Suite 406  
Lakewood, CO 80235*

*Office (303) 940-3426 ext. 5  
Mobile (303) 808-7227*

[paulrosasco@emsidenver.com](mailto:paulrosasco@emsidenver.com)



Virus-free. [www.avast.com](http://www.avast.com)